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ABSTRACT

As part of its mission to provide centralized services for the acquisition, storage, retrieval, and dissemination of scientific and technical information (STI) to support Department of Defense (DoD) research, development, and engineering studies programs, the Defense Technical Information Center (DTIC) sponsors the Shared Bibliographic Input Network (SBIN) for online shared cataloging of technical reports among DoD agencies and their contractors. Initiated in 1977 as an experiment, SBIN is now an integral part of DTIC operations. This report discusses the period of the SBIN experiment, including the process of moving from a centralized to a decentralized cataloging facility; the identification and resolution of problems encountered in the areas of standards, systems, and operating procedures; DTIC's Resource Sharing Advisory Group (RSAG); and an evaluation of SBIN. SBIN goals and an SBIN economic analysis are appended. (KM)

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The Defense Technical Information Center (DTIC) sponsors the Shared Bibliographic Input Network (SBIN) for on-line shared cataloging of technical reports among Department of Defense (DoD) agencies and their contractors. SBIN was initiated in 1977 as an experiment and was evaluated in 1981 and declared to merit operational implementation. This report covers the period of the SBIN experiment. The process of moving from a centralized to a decentralized cataloging facility is described in terms of DTIC's experience. Problems which were encountered in the areas of standards, systems, and operating procedures and steps taken to resolve these problems are detailed. The SBIN project evaluation which led to its operational implementation is summarized in the report.

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INTRODUCTION

The Defense Technical Information Center (DTIC) provides centralized services for the acquisition, storage, retrieval, and dissemination of scientific and technical information (STI) to support Department of Defense (DoD) research, development, and engineering studies programs. (DoD Directive 3200.12, February 15, 1983, subject: DoD Scientific and Technical Information Program.) One of DTIC's functions is to support DoD technical libraries; this includes the establishment of networks and resource sharing.

Accordingly, DTIC sponsors the Shared Bibliographic Input Network (SBIN) for on-line shared cataloging of technical reports among DoD agencies and their contractors. SBIN was initiated in 1977 as an experiment; it was evaluated in 1981 and was declared to merit operational implementation.

BACKGROUND

Shared cataloging took root in the United States library community during the 1960s. Major DoD libraries and information centers were quick to recognize that this new method would allow them to provide quality cataloging faster and at lower unit cost. By the 1970s, they were using shared systems such as OCLC (On-line Computer Library Center) to catalog their collections of books. They were waiting for the system developments that would make it possible for them to share the work -- and reduce the tremendous cost -- of doing the original cataloging of the cascade of technical reports they were receiving.

Cataloging (both descriptive and subject) of technical reports was being duplicated many times within the Defense community. For example, documents which were cataloged by DTIC were recataloged by DTIC users for the local catalogs. Libraries expressed their belief that the time had come to develop a shared cataloging system for technical reports when, in 1976, they presented this requirement to DTIC. A committee was formed to discuss their specific needs relative to a shared cataloging system and to develop objectives and approaches. The committee found that, since classified, proprietary, and sensitive information was involved, a major requirement was for a secure network. This stipulation eliminated the possibility of using existing shared cataloging systems.

The committee's recommendations for a shared cataloging system included that it be on line, real-time interactive, searchable by multiple access points (including in-depth subject searches via Boolean logic techniques), and that it provide the ability to flag cataloging records in the system to indicate library holdings. Significantly excluded from the requirements were catalog card generation and interlibrary loan.

The committee settled on the objective to "develop a pilot project for a shared cataloging system of Defense community publications using classified remote on-line terminals." It

developed a project outline and recommended use of the centralized computer capability, software, and technical report (TR) data base resident at DTIC. In 1977, Mr. Hubert E. Sauter, the Administrator of DTIC, agreed to sponsor the project, and Shared Bibliographic Input Network (SBIN) was born. [This project was referred to as the Shared Bibliographic Input Experiment (SBIE) from 1977 until 1981, the current name, SBIN, is used throughout this report.]

THE EXPERIMENTAL YEARS

DTIC's Defense RDT&E On-Line System (DROLS) technical report file was used as the basis for the on-line catalog. All sites were required to obtain dedicated, secure access to DROLS. DROLS was resident on a UNIVAC 1100/82; UNIVAC 200 or 100 terminals were required for access. Sites used the DROLS Remote Terminal Input Subsystem (RTIS) to enter cataloging data into DROLS. UNIVAC tape cassettes were optional peripheral equipment for SBIN site input.

The SBIN project was a partnership between DTIC and the SBIN sites. DTIC hoped to have the project evolve into a user-driven network. Frequent meetings were held to discuss network issues arising from this cooperative effort. One of the first meetings centered on assigning responsibilities to network participants. The following agreements were reached.

Using a classified remote terminal on line to DTIC, user libraries would:

a. Search for cataloging information in DTIC's TR data base. If such information was found (document in the DTIC collection), the user library would copy the cataloging information and indicate to DTIC that it held a copy.

b. Input cataloging and acquisition data for documents not in DTIC's collection. This information would include original cataloging, source of the document, and channel for release (if known).

c. Speed announcement and availability of their own publications. Since many of the user libraries received copies of their own agency's publications before copies were distributed elsewhere, they would input cataloging information (on line to DTIC) at time of publication. They would indicate if the publication was scheduled to go to DTIC and, if not, the channel for release. Thus, identification and acquisition information would be available sooner to DTIC and the user community.

d. Search the DTIC data base for acquisition information. As more libraries participated and input information about non-DTIC documents, these subject or identification searches would be more fruitful. A clearinghouse of Defense document acquisition information would save search time by user libraries and would allow faster acquisition of documents by end users.

DTIC would:

a. Offer cataloging services. User libraries would be allowed to search DTIC's technical report data base on line for cataloging information. DTIC also would print out (on a regular basis) a list of the library's holdings for each library participating in shared cataloging.

b. Provide expanded acquisition service. By building a data base of bibliographic and acquisition information for non-DTIC documents, a central clearinghouse of acquisition information would be provided to the Defense community. By attempting to acquire as many of these documents as possible, DTIC would enlarge the central data collection of Defense information.

c. Maintain quality control for file integrity. DTIC would screen all input for security and quality control based on established DTIC standards, authority files, and output requirements.

d. Help train user libraries in system operation. DTIC would provide advice about the installation and operation of the remote classified on-line terminals and the rules for cataloging followed by DTIC.

The network participants also developed short- and long-range goals which are contained in appendix A.

Ruth Smith, the Technical Information Services Manager at the Institute for Defense Analyses, in a letter dated December 3, 1976 to DTIC, subject: Shared Cataloging Experiment within the Defense Community, documented the following benefits to participants in the project.

> "User libraries will save the intellectual effort and staff time required for recataloging the same documents, identifying documents, and searching for acquisition channels. The time saved can be applied to the original cataloging and subject analysis (working closely with the authors) of their own agency's publications. They will be able to phase out the production of catalog cards and the maintenance of a card catalog, for a savings in staff, time and space. They also will be able to speed the acquisition process and serve the end-users better.
>
> DTIC will be able to offer better services to the Defense community. It will lessen the burden it now imposes on the community of users by requiring that they find the documents that DTIC does not have. It will increase the percentage of documents available from DTIC and thereby allow the user community to acquire documents more efficiently. By receiving cataloging information from the source, DTIC will save cataloging time which can be applied to the quality control screening. This will provide the data base an additional measure of accuracy and reliability."

The SBIN participants agreed to conduct the experiment in four phases. During Phase I, sites cataloged current publications generated by their agencies. This phase gave sites the opportunity to test and develop their on-line input skills. All Phase I documents were sent to DTIC for dissemination. In Phase II, sites cataloged older documents generated by their agencies. Duplicate checking capabilities were tested and improved during

this phase. Phase II documents also were sent to DTIC. Phase III allowed sites to input cataloging data for documents generated by their agencies which were suitable for announcement to the DTIC community, but dissemination responsibility was retained by the sites. Cataloging data for reports generated off-site, but held in a participating site's collection, and which were suitable for DTIC on-line announcement, were incorporated in Phase IV. The SBIN site did not send Phase IV documents to DTIC. The document's originator was allowed to send the document to DTIC, or DTIC tried to acquire the document via routine channels.

The problems encountered during the first four stages of the project can be grouped under the following headings: standards, systems, and operating procedures.

STANDARDS

DTIC's descriptive cataloging policy for technical reports was based on the Committee on Scientific and Technical Information (COSATI) Standard for Descriptive Cataloging. This standard was developed by COSATI and was intended to ensure compatibility among the major reports-producing agencies of the Federal government. COSATI standards were, in fact, accepted and utilized for technical report cataloging by many DoD libraries as well as Federal entities such as the National Technical Information Service (NTIS). Unfortunately, actual implementation and utilization of the standard has nurtured the evolution of several different versions of COSATI within the community as indicated in a paper prepared by Madeline M. Henderson, National Technical Information Service, Springfield, VA, August 1980, entitled Study of Cooperation in the Processing of Technical Report Literature.

DTIC's implementation of COSATI was based on documented cataloging rules contained in The COSATI Guidelines for Descriptive Cataloging, hundreds of index cards stored in the DTIC Descriptive Cataloging Branch, and precedent remembered by individual catalogers. This system, although effective for

centralized cataloging of documents, had serious shortcomings in the network environment. For SBIN to work, all participants needed equal access to the cataloging tools and standards.

To this end, DTIC developed the Shared Bibliographic Input Guidelines and distributed them to network participants. In addition, DTIC's cataloging policy shifted toward accepting information as it was displayed on the document cover (or DD 1473, Report Documentation Page) rather than referring to standard formats stored in card files. The DTIC Cataloging Branch, which was responsible for reviewing all network input, was encouraged to take the broader view when questionable entries were encountered. A Cataloging Rules Committee was an eventual need and was established to review cataloging policy and procedures. This committee will be covered later in the report.

In addition to descriptive cataloging, network participants were responsible for subject cataloging. At DTIC, the descriptive cataloging function and the subject analysis function were, and still are, performed in separate branches by different personnel. Because of the large volume of reports DTIC processes, staff members responsible for subject analysis are assigned specialty areas and focus on reports in these areas. In contrast, most of the libraries participating in SBIN do not have the resources to separate subject and descriptive cataloging. General practice calls for each cataloger to perform all the cataloging functions.

DTIC used controlled vocabulary, identifiers, and open-ended terms to describe documents. Two data fields, a descriptor field, and an identifier field were available for subject terms. Unclassified controlled vocabulary terms were entered in the descriptor field. Classified controlled vocabulary, open-ended terms, and identifiers were entered in the identifier field.

The tools used for subject analysis at DTIC included the DTIC Retrieval and Indexing Terminology (DRIT), the Combined Frequency Count, the Natural Language Data Base (NLDB), and various commercially available reference sources. DRIT contains DTIC's controlled vocabulary terms: posting terms (main entry) along with narrower and broader terms. In addition, DRIT contains a hierarchy and a Key Word Out of Context (KWOC) listing of terms.

The major shortcoming of DRIT, as pointed out by network participants, is the lack of "use" or "use for" references. Due to high printing costs, NLDB was not available outside of DTIC.

The Combined Frequency Count is a nine-volume, classified publication which lists all the terms found in either the descriptor or identifier field, along with the frequency with which they were used. This publication was periodically made available to DTIC users but could not be made available on demand. Once again printing costs were the deterring factor.

This lack of indexing tools posed a problem to network participants who were trying to follow DTIC conventions. The lack of "use" references often resulted in an SBIN site choosing a term which was changed by DTIC reviewers. Another problem was that DTIC staff was indexing for a general audience while SBIN sites were indexing for highly specialized populations. After lengthy discussions concerning these problems, a network policy was adopted: DTIC reviewers would not delete any site-assigned terms, but DTIC staff had the option of adding terms. This policy proved satisfactory to all parties.

In addition to subject terms, SBIN project participants also assigned subject fields and groups. Fields and groups were chosen from the COSATI Subject Category List (DoD-Modified), which consists of 22 fields and 188 groups. Each technical report cataloged in DROLS is assigned to at least one field and group. Proper assignment of fields and groups is critical because every authorized user of classified DTIC services is required to have an approved subject profile in terms of these fields and groups.

The DTIC release of classified information is based upon a comparison of the fields and groups authorized for a requester with the field and group assigned to a classified document. The fields and groups assigned determine if the requester meets the "need-to-know" condition for access to classified reports and bibliographies. Because DTIC is responsible for controlling access, a network agreement recognized DTIC's authority to delete a site-assigned field and group category which was judged to be inappropriate. DTIC agreed to contact the site concerned and discuss the matter before making the change.

SYSTEMS

It was agreed at the outset of SBIN that the project would be conducted within existing DROLS capabilities with a minimum of additional programing. One of the allowed DROLS modifications was to let SBIN sites assign ADE accession numbers.

Documents cataloged at DTIC are assigned ADA, ADB, or ADC accession numbers for identification and ordering purposes. SBIN sites were given ADE number ranges to assign to their cataloging records. The ADE numbers signified to the DTIC user community that the record was entered by an SBIN site and that DTIC did not have the document available for distribution. When a document corresponding to an ADE record is received by DTIC, the ADE number is replaced with an ADA, ADB, or ADC number.

Another allowed modification involved adding a new field to DROLS to identify a citation for which an SBIN participant had a technical report. The "SBIN Site Holdings Symbol" accommodated this requirement. Each SBIN member was assigned a unique holdings symbol and could append it to any record in DROLS.

The holdings symbol was a searchable data element that network members could include in a DROLS search strategy to limit their search to reports held locally. This capability was the first step towards providing SBIN members with on-line catalogs. The critical design feature of the holdings symbol set forth by network members was that it be transparent to other users of DROLS yet permit an SBIN site to tell what documents it held. This was done because the libraries did not have the resources to support an interlibrary loan program.

The nagging problem which kept revisiting the early SBIN activity was the lack of a responsive on-line duplicate checking capability. The DROLS technical report system consisted of a Current File (CF) and a Master File. The CF then in use was an in-process working file where citations were stored prior to being updated to the Master File every 2 weeks, as continues to be the procedure. Because the CF contains data which has not passed

through security review, the retrieval and display options must be limited compared to those available in the master TR file. The CF display was limited to AD numbers and retrieval was only by subject.

This CF structure proved totally unacceptable for SBIN on-line duplicate checking. SBIN sites needed to search the CF using descriptive fields such as title, report number, report date, corporate author, and personal author. Equally important, they needed the capability to display these data elements to see if the search results matched the report in hand. As a temporary measure, SBIN sites agreed to catalog only those reports performed in-house or under contract for their organization (Phases I and II), and DTIC agreed not to catalog the reports of any SBIN site. This approach worked well in that duplicate entries were avoided, but it defeated the goal of an on-line catalog of individual library holdings.

In 1980, a major redesign of the CF was initiated to satisfy the requirements of the SBIN project. The redesign effort resulted in:

1. Daily extract of all RTIS records stored in all RTIS activities which are assigned store names which begin with ADA, ADB, ADC, and ADE.

2. Daily transfer of selected data fields from these electronic records into a displayable Current Direct File that contains:

- field 1 - AD number
- field 5 - Corporate author
- field 6 - Unclassified title
- field 8 - Title classification (U)
- field 9 - Descriptive note
- field 10 - Personal authors
- field 11 - Report date
- field 14 - Report numbers
- field 15 - Contract numbers
- field 18 - Monitor acronyms
- field 19 - Monitor series numbers
- field 20 - Report classification
- field 34 - Report serial
- field 35 - Source code

3. Daily creation of a searchable Current Inverted File that contains search terms from the following Current Direct File data fields:

- field 6 - Unclassified title key (role 55 or 56)
- field 10 - Personal authors (role 11)
- field 11 - Report date (role 24)
- field 14 - Report numbers (role 51)
- field 15 - Contract numbers (role 16)
- field 18 - Monitor acronyms (role 03)
- field 19 - Monitor series numbers (role 53)
- field 20 - Report classification (role 58)
- field 34 - Report serial (role 52)
- field 35 - Source code (role 02)

The restructured CF made the DROLS environment hospitable to true shared cataloging.

There were still problems in the duplicate checking area. DROLS was not designed as a real-time system; a real-time requirement did not exist until the SBIN project. Even with the redesign of the CF, updates were done daily. Real-time duplicate checking is available in the major shared cataloging systems and the SBIN participants agreed that it was a basic requirement of the SBIN project. Extensive reprograming was necessary to make DROLS a real-time system and this effort could not be undertaken in the near term. Instead, system updates were increased to twice a day.

There were no other major changes made to DROLS during the 3-year experimental period of the SBIN project.

OPERATING PROCEDURES

DTIC developed high proficiency in the area of technical report cataloging as a result of years of experience and procedural development. Technical reports flowed through a human pipeline of highly skilled staff using streamlined procedures.

Some of the procedures that were developed and refined for centralized cataloging efficiency, however, played havoc with automated network input. A brief review of the pipeline process in practice at the time, excluding microfiching, will illustrate some of the difficulties. A document received by DTIC and selected for input into DROLS would be sent to Preliminary Cataloging. The preliminary catalogers manually checked DTIC's card catalog to ensure that the document was not already in the system, recorded cataloging data, and filed a temporary card. The document then went to the Descriptive Cataloging Branch where a data input form was initiated and appropriate data elements were recorded. The document, along with its input form, then went to the Subject Analysis Branch where additional data elements were recorded. When the data input form was complete, it was given to data transcribers who input the data to DROLS. This process might take several days to several weeks, depending on the document.

In effect, DTIC and the SBIN sites were duplicate checking and inputting initial cataloging data into two different files: at DTIC, into the card catalog; at SBIN sites, into the on-line system.

DTIC personnel in these areas had neither the equipment nor the training necessary to search the on-line system. DTIC management reviewed this situation and made the decision to automate the duplicate checking and descriptive cataloging functions. Equipment was ordered, personnel were trained, and standard operating procedures were revised. Once this change was effected, there was a uniform method of duplicate checking and cataloging for SBIN sites and DTIC.

Changes in operating procedures were a common network experience since all participants were changing their individual technical report cataloging procedures. An excellent description of an SBIN site experience is contained in the paper How Life Has Changed at CARL written by Barbara Everidge, Systems Librarian, Combined Arms Research Library, Fort Leavenworth, Kansas, February 1983.

USER GROUP

In 1980, DTIC's Administrator established the Resource Sharing Advisory Group (RSAG) to provide advice and make recommendations on matters dealing with SBIN and other resource sharing activities. As required by its charter, RSAG has nine official members and meets at least twice a year. Its meetings are open to all members of the information community. RSAG addresses specific areas such as descriptive cataloging and subject indexing of documents, on-line input capabilities, output products, expansion of SBIN, and development of future system capabilities. RSAG also provides the DTIC user community an official voice in, and vehicle for, developing SBIN policies and procedures.

Because of the importance of standard cataloging policy in SBIN, RSAG established a subcommittee on cataloging rules. This committee reviews technical report cataloging rules used by government and nongovernment agencies and makes recommendations leading to a standardization of cataloging rules and procedures within the Defense community. It also addresses cataloging problems which affect the daily functioning of SBIN members and tries to establish acceptable network agreements.

SBIN PROJECT EVALUATION

The SBIN project completed its third year in 1980 and it was time to evaluate its effectiveness: had it demonstrated that this approach could maintain or increase the quality of technical information services in DoD while effecting economics and improving timeliness? Opinions were solicited from all network members. Mr. Paul Klinefelter, then the project officer for SBIN, stated:

> "SBIN has above all else demonstrated that the DoD network of technical information services centered at DTIC needs to evolve into a tightly integrated community of organizations which use common ADP facilities and

files, observe common rules and standards, and communicate to the point that cataloging, indexing and data creation -- done once -- essentially need not be repeated elsewhere in the network. This results in cumulative savings in terms of time and manpower."

The improvements in the quality of technical information service in DoD which are attributable to, or are to be derived from, SBIN were summarized by the project evaluation as follows:

1. Reduced duplicative effort in cataloging and indexing technical reports. In a little over 3 years participant sites have created authoritative records for some 4,500 technical reports which are available to each other and to the entire DTIC user community as one-time efforts which neither DTIC nor other users of the data need to repeat. Standard rules have been used and this major accomplishment by the initial sites will have increasing advantages as more sites participate and as more and more technical reports are given one-time processing at point of generation or of first usage.

2. Faster announcement of availability of reports. SBIN records are announced on line and in DTIC bibliographies 6 weeks to 2 months earlier than announcement in the biweekly TAB. This early announcement has obvious benefits in terms of the timely support of RDT&E activities. Technical reports are thus known to exist earlier, with contact points provided; thus, copies can be obtained quickly in critical situations. A major accomplishment of SBIN is making the existence of technical reports known to the RDT&E community much earlier than had been the case before SBIN.

3. Identification of DoD technical information not previously or normally included in the DTIC holdings for announcement and/or acquisition. Phase III SBIN has initiated the important step of making available through on-line and bibliographic announcement, knowledge of technical reports which are not releasable to DTIC. In addition, Phase IV entries alert DTIC to technical reports it does not hold which are of significance to DoD users. The bibliographic record, in this case, is already on the file, having been created and stored from a SBIN participant site.

4. DoD network-wide cooperation in creating cataloging and indexing rules and standards. SBIN participants learn DTIC rules when entering the network. However, they quickly begin to develop useful suggestions for the modification of these rules to make them more responsive to the needs of the entire DoD community. DTIC's internal rules and practices have been changed in significant ways to accommodate the common interest. As an example, remote-site-generated entries are modified at DTIC only when absolutely necessary for retrievability, and only with the concurrence of the creating site. Special entries made for legitimate local purposes, such as subject terms, are retained in the file.

5. Better understanding of common problems and improved service capability. A frequent SBIN participant observation is that the project has given a new dimension to their services since they operate in effect as "little DTICs" with responsibility for correct and standardized descriptive data for reports from all sources. With in-depth experience in using the DTIC system and files for both input and retrieval, they feel that their capacity for providing reliable and effective information support has been greatly enhanced. SBIN has broadened their knowledge and effectiveness in the DoD information network.

6. Greatly improved DTIC/user working relationship. SBIN participants state that they feel for the first time that they have a direct line of communication in apprising DTIC of problems and in recommending solutions. RSAG was established at the suggestion of SBIN participants.

7. Site holdings symbol. This provides the basis for phasing out the local preparation of catalog cards and the maintenance of catalog files -- one of the most expensive and labor intensive functions of DoD library/SBIN sites. Since 1 Apr 80, when this new data element was available for use by SBIN sites, more than 4,400 AD records have had site holdings symbols added to them. SBIN sites can use the DTIC TR file as their own on-line catalogs. Using the site holdings symbol as a limiter, they are able to search the file and restrict outputs to their own holdings, as opposed to the full-DTIC-file searches they already

perform. This is potentially a very powerful advantage. DTIC has not yet provided the capability to provide batched outputs in holdings symbol order, an SBIN requirement. In the interim, an additional index to bibliographies is available which lists holdings symbol/AD number/title. The holdings symbol allows the sites to manipulate their own data while it remains available to the rest of the DTIC user community.

The economic analysis of the project was based on the cost to DTIC to support SBIN, assuming that all major programing efforts had been completed, that labor to support computer operations for TR input would be constant whether the SBIN or normal input system was used, and that increased computer usage by SBIN participants would be negligible. A summary of the economic analysis is contained in appendix B.

Based on the SBIN project evaluation, a recommendation was made and accepted that SBIN become an integral part of DTIC operations.

CONCLUSION

The SBIN program is now an integral part of DTIC operations. Its success is based on the fact that DTIC users wanted the program and that they were given a voice in how it was developed and implemented. RSAG continues to work with DTIC and to provide requirements for improvements to the system.

APPENDIX A

SHARED BIBLIOGRAPHIC INPUT NETWORK (SBIN)
GOALS

Short-Range Goals.

1. Conduct an experiment to test the feasibility of shared bibliographic input.

- Select the participants.
- Draw up the procedures.
- Train the operating staff.
- Collect and evaluate data.

2. Evaluate the experiment.

3. Publicize the results of the experiment.

Long-Range Goals.

1. To have a Defense on-line catalog, a machine-readable data base of bibliographic information incorporating the catalogs of all Military and Defense-contractor libraries/information centers.

2. To provide on-line searching of the Defense on line catalog from remote terminal sites.

3. To provide a central clearinghouse of availability information for the acquisition of Defense-sponsored documents, whether or not the documents themselves are deposited at DTIC.

4. To produce on a regularly scheduled basis, as requested, printouts (or microfiche copies) of the individual holdings of libraries/information centers inputting this information, for their own use.

5. To provide management information in regard to publications generated and distributed by Military agencies and Defense contractors.

6. To provide support for local storage of restricted access material, using the same system.

APPENDIX B
SBIN ECONOMIC ANALYSIS

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
(1) No. of SBIN Participants (Year End)	17	29	41	53	65	77	86	86
(2) Records Input to DTIC	31,000	31,000	33,000	34,000	35,000	35,000	35,000	35,000
A. Regular DTIC Input	(29,500)	(29,000)	(30,000)	(30,000)	(30,000)	(29,000)	(28,000)	(27,000)
B. SBIN Input to DTIC Holdings	(1,500)	(2,000)	(3,000)	(4,000)	(5,000)	(6,000)	(7,000)	(7,500)
(3) Workyear Requirements Transferred to SBIN Participants	1	2		3	4	5	6	6
(4) DTIC Workyear Cost to Perform Equivalent Work	$39,345	$78,690	$78,690	$18,035	$157,380	$196,725	$236,070	$236,070
(5) Training Costs	$55,000	$55,000	$55,000	$55,000	$ 55,000	$ 55,000	$ 41,000	0
(6) Net Annual Cost (Saving)	$15,655	($23,69)	($23,690)	($63,035)	($102,380)	($141,725)	($195,070)	($236.070)
(7) Discount Factor *	.945	.844	.754	.673	.601	.536	.479	.428
(8) Discounted Annual Cost	$14,794	($19,994)	($17,862)	($42,423)	($ 61,530)	($ 75,964)	($ 93,438)	($101,038)
(9) Cumulative Discounted Annual Costs (Savings)	$14,794	($ 5,200)	($23,062)	($65,485)	($127,015)	($202,979)	($296,437)	($397,475)

* Discount Rate = 10%
Differential Inflation Rate = -2%